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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892,605	06/28/2001	Hiroyuki Sasai	2001_0928A	4838

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EXAMINER	
CURS, NATHAN M	
ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/892,605	SASAI ET AL.	
	Examiner	Art Unit	
	Nathan Curs	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 June 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) *2-5,7 and 11-19* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 6 and 8-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 28 June 2001 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Election/Restrictions

2. Applicant's election without traverse of species 1 (fig. 1) in the reply filed on 6 October 2004 is acknowledged.

3. Claims 2-5, 7 and 11-19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seto et al. (US Patent Application Publication No. 2003/0035183) in view of Franco et al. (US Patent Application Publication No. 2004/0190911).

Regarding claim 1, Seto et al. disclose an optical transmission system, used for radio access (paragraph 0001) for transmitting information between a center station and a subscriber terminal through a radio base station for transmitting and receiving a radio signal to and from an antenna portion, for optically transmitting radio signals bidirectionally by respectively connecting a plurality of radio base stations covering different service areas and the center station through a plurality of optical fibers (fig. 15 and paragraphs 0197-0200), wherein said center station comprises at least an electrical-optical conversion portion (fig. 15, element 18), receiving one or more baseband signals as one or more modulated electric signals each having a predetermined intermediate frequency, for converting the electric signals into optical signals by intensity modulation (fig. 15, element 10B and paragraphs 0200-0202), a local oscillation signal source for outputting a predetermined local oscillation signal (fig. 15, element 14-1 or 14-2 and paragraph 0200), and an optical branching portion for branching the optical signal and respectively outputting optical signals obtained by the branching to the plurality of optical fibers (fig. 15, element "optical divider"), and each of said plurality of radio base stations comprises at least an optical-electrical conversion portion for converting the optical signal transmitted through said optical fiber into an electric signal in a radio frequency band (fig. 15, element "O/E conv" and paragraph 0203), and a band pass filter for extracting only an electric signal component in a desired frequency band from the electric signal obtained by the conversion in said optical-electrical conversion portion (fig. 15, element 38 and paragraph 0203), and feeding the extracted electric signal component to said antenna portion (fig. 15, element 48 and paragraph 0203). Seto et al. disclose the pilot signal added with the data signals in the electrical domain,

and do not disclose an external modulation portion after the E/O conversion at the transmitting station for intensity-modulating the optical signal obtained by the E/O conversion using the local oscillation signals. Franco et al. disclose an optical modulation configuration where one modulator modulates a data signal onto an optical signal (thus converting the electrical signal to optical signal) and also externally modulating sinusoidal signals onto the optical signal (fig. 1 and paragraphs 0086-0097). It would have been obvious to one of ordinary skill in the art at the time of the invention that the second optical modulator of Franco et al. could be added to the E/O converter section of Seto et al. for adding the carrier frequency signals, and thus modifying the pilot carrier signal configuration of Seto et al. such that the electrical summation signal (Seto et al.: fig. 15, element 16 output), without the carrier signals, is converted to an optical signal and then modulated with the pilot signals using external modulation, as taught by Franco et al., in order to provide the benefit of external modulation over direct modulation, since external modulation does not produce the transmission distance limiting signal chirp that is produced if directly modulating a laser.

Regarding claim 6, the combination of Seto et al. and Franco et al. disclose the optical transmission system according to claim 1, wherein the frequencies of the radio signals respectively used in said radio base stations are set so as to differ (Seto et al.: paragraph 0199).

Regarding claim 10, the combination of Seto et al. and Franco et al. disclose the optical transmission system according to claim 1, wherein a semiconductor laser for converting an electric signal into an optical signal through direct modulation is used for said electrical-optical conversion portion (fig. 15, element 86 and paragraph 0200).

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seto et al. (US Patent Application Publication No. 2003/0035183) in view of Franco et al. (US Patent

Application Publication No. 2004/0190911) as applied to claims 1, 6 and 10 above, and further in view of Way et al. (US Patent No. 6525857).

Regarding claim 8, the combination of Seto et al. and Franco et al. disclose the optical transmission system according to claim 1, but do not disclose that the optical signal outputted from said external modulation portion is an optical single-sideband signal with a carrier and a single-sideband component. Franco et al. disclose an optical modulation configuration where one modulator externally modulates a data signal onto an optical signal (thus converting the electrical signal to optical signal) and also externally modulating sinusoidal signals onto the optical signal, where the serial order of the two modulators is not significant (fig. 1 and paragraphs 0086-0097). It would have been obvious to one of ordinary skill in the art at the time of the invention that an external modulator could also be used for the E/O conversion in place of the direct modulator of Seto et al., in order to provide the benefit of external modulation over direct modulation for the E/O conversion as well, since external modulation does not produce the transmission distance limiting signal chirp that is produced if directly modulating a laser. Further, Way et al. disclose an external modulator for radio transmission that produces a single sideband signal by modulating the carrier frequency using a channel signal and phase-shifted version of the channel signal (fig. 5A and col. 5, lines 38-57). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the SSB modulation technique disclosed by Way et al. for the E/O external modulator of the combination of Seto et al. and Franco et al., in order to provide the benefit of bandwidth efficiency for the multi-channel system, achieved using SSB transmission as taught by Way et al. (col. 1, lines 44-65).

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seto et al. (US Patent Application Publication No. 2003/0035183) in view of Franco et al. (US Patent

Application Publication No. 2004/0190911) as applied to claims 1, 6 and 10 above, and further in view of Ooi et al. (US Patent No. 6362913).

Regarding claim 9, the combination of Seto et al. and Franco et al. disclose the optical transmission system according to claim 1, wherein a Mach-Zehnder type external modulator is used for said external modulation portion, but do not disclose that a bias point in the external modulator is set to a point at which light output power is the minimum or maximum so that the optical signal is intensity-modulated by a component which is twice the frequency of said local oscillation signal. However, Ooi et al. disclose details on the conventional behavior of a mach-zehnder external modulator and disclose that when the bias of the modulator is at an optimum level, the output signal is modulated by a component that is twice the frequency of an oscillation modulation signal (fig. 35 and col. 3, lines 42-52). It would have been obvious to one of ordinary skill in the art at the time of the invention to set the bias of the external modulator of the combination of Seto et al. and Franco et al. to the optimum value in order to produce the optimum output as taught by Ooi et al.

Conclusion

8. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached M-F (from 9 AM to 5 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

M. R. Sedighian

M. R. SEDIGHIAN
PRIMARY EXAMINER